THE VETERINARY RECORD

FOUNDED BY WILLIAM HUNTING, F.R.C.V.S., 1888

No. 35. SEPTEMBER 2, 1950 VOL. 62.

THE IMPORTANCE TO THE COMMUNITY OF THE CONTROL OF DISEASES INIMICAL TO MAN *

I: By WALTER SCOTT, F.R.C.V.S., D.V.S.M.,

WORCESTER

INTRODUCTION

I should perhaps say here that I am on the whole-time staff of the Ministry of Agriculture and Fisheries—Divisional Veterinary Officer in charge of the County of Worcester—and as such I propose to say something about tuberculosis because tuberculosis is one of the disease conditions with which I am intimately concerned.

The branch of the Ministry to which I belong is the Animal Health Branch and among the various duties we undertake are included: market inspection, import and export of animals, dairy herd inspections, and dealing with cases of notifiable diseases such as foot-and-mouth disease, anthrax, rabies, tuberculosis, etc.; our other duties include tuberculin testing under the Tuberculosis (Attested Herds) Scheme.

We are all concerned with the incidence of tuberculosis and I think I am justified in saying that the general public is much more conversant with what the medical profession is doing to combat tuberculosis than with what the veterinary profession is doing. Comparatively few people, outside the veterinary profession and the agricultural community, have ever heard of the Tuberculosis (Attested Herds) Scheme and yet it is a fact that under the Scheme at the end of 1949, there were 44,889 herds in the country, comprising 1,762,200 cattle, which were officially certified to be free from tuberculosis. That represents a figure of 19·0 per cent. in a cattle population of 9,250,000.

Before a herd is eligible for inclusion in the Register of Attested Herds, two tuberculin tests must have been carried out with an interval of not less than 60 days and not more than 12 months between the tests, and there must have been no reactors at either test. The herd is then subjected to a further test carried out by a W.T.V.I. and if no reactors are revealed, the Certificate of Attestation is granted.

In 1948, there were 26 attested herds in Worcestershire, in 1949 there were 179 containing 9,030 cattle or 8·8 per cent. of the cattle population of 102,638.

For comparative purposes I give the figures (at 31.12.49) for neighbouring counties:—

Staffs	269 herds	5·1 per cent.	283,355
Salop	527 „	11·0 „	282,699
Warwicks	265 „	9·3 „	151,148

I do not want to get on to controversial ground and I am on safe ground when I say that you doctors and we veterinary surgeons want to reduce and eventually eliminate tuberculosis. I do not hesitate to say that pasteurisation of our milk supply will reduce bovine type of tuberculosis infection in man, *but* our aim (and I think a better proposition) is to eradicate tuberculosis in bovines. Clinical examinations such as are carried out at least once a year in all dairy herds throughout the country remove gravely affected animals (these are dealt with under the Tuberculosis Order 1938, to which I will refer later) and if combined with certain laboratory tests, may detect some early cases of tuberculosis, but do not insure against tuberculous infection of the milk. It is a fact that the highest incidence of tuberculosis among cows is in areas supplying milk to the large cities (flying herds which provide every opportunity for the spread of infection).

During the three months ending 31.12.49, under the Tuberculosis Order, we dealt with 156 cattle in Staffs, 40 in Warwicks and nine in Worcs.

In the Report of the Proceedings under the Diseases of Animals Acts and Orders for the years 1938–47 the following information is given:—

Cattle slaughtered under the Order declined in number from 19,910 in 1938 to 6,545 in 1947.

Nearly 40 per cent. of cattle slaughtered were detected in the ordinary course of routine veterinary inspections of dairy herds; rather more than 50 per cent. were reported by the owner or his veterinary surgeon, the remainder were detected during investigations following reports by medical officers of health that supplies from particular herds had been found to contain tubercle bacilli.

The substantial decline in numbers of cases slaughtered cannot be taken as a measure of the general decline in the incidence of bovine tuberculosis. The more probable explanation is the fact that during the war years, farmers were encouraged to cull unhealthy and unthrifty animals.

On the other hand, decline in numbers slaughtered has been most marked in areas where the Attested Herds Scheme has made most progress and in those districts there was undoubtedly a reduction in incidence.

Tuberculosis in calves is not common, but occasionally congenital cases are met with when the uterus of the dam is involved. Young animals are less frequently affected than older cattle, and this is the direct result of our methods of animal husbandry because even though on many farms calves and young cattle are housed under conditions which, from the point of view of hygiene, leave much to be desired, it is surprising how few young animals react to the tuberculin test. The fact that milk is often looked upon as too valuable to feed calves (except in pedigree herds) has a lot to do with this, particularly in the ordinary flying commercial herd.

BOVINE PULMONARY TUBERCULOSIS

Some recent work by Stamp on material obtained from slaughter-houses has shown that in the great majority of cases, primary infection in cattle is by the respiratory route, and the first lesions occur in the lungs. In the past, many observers have noticed only the lesion in the lymph gland and failed to detect what may be a small lesion in the lung substance. So far as cattle are concerned, the natural resistance, at least during adult life, is comparatively low. In the majority of cases, caseation is prominent and healing is inconspicuous while regional lymph nodes frequently become massively involved.

If I may be allowed to digress for a moment, may I put forward something which I hope may provoke discussion. I am going to say something which, had I been an Irishman instead of a Scot, would have amounted to "trailing my

* Papers contributed to the joint meeting of the Midland Counties Veterinary Medical Association and the Midland Medical Society, held at the Birmingham Medical Institute on April 19th, 1950.

coat " ; here it is—you doctors very often say to us veterinary surgeons that *our* patients have been responsible for infecting your patients (particularly your young patients) but I do not want you to forget that it has been known for your patients (*e.g.*, a cowman on the farm) to infect ours.

To make amends for that last remark, I should say that there is, at the present time, a very grave risk of my patients being responsible for the introduction of tubercle infection into a household. I refer to the purchase of uncooked meat from the knacker yards to feed household pets. A considerable amount of the flesh sold from these yards is from animals affected in greater or less degree with tuberculosis and it is very easy to understand how cooking utensils, kitchen sinks, etc., may be contaminated by such material. I am not in a position to give you any information regarding the incidence of tuberculosis in dogs and cats in Birmingham, but I think I am correct in saying that Birmingham Corporation have secured power to enforce sterilisation of all such material before its sale to the public. I have no figures for Birmingham, but in July, 1949, Jennings, of the Department of Veterinary Pathology, Liverpool University, published a paper on the distribution of tuberculous lesions in dogs and cats in the Liverpool district. The incidence was 6·8 per cent. of a total of 165 dogs autopsied, and it may well be that the high incidence bears a close relationship to the proximity of Cheshire and Lancashire with their high incidence of bovine tuberculosis (animals slaughtered in three months ending 31.12.49—Cheshire 77, Lancashire 111).

Before leaving the subject of tuberculosis may I refer to the *British Medical Journal* of May 21st, 1949 : " The risk of contracting tuberculosis at *post-mortem* examinations, both to the participants and the onlookers, may have been underestimated. In Scandinavia and America, it has been found that there is a very sharp rise in the number of students giving positive reactions for tubercle as soon as they commence their pathology course, and it would seem from the evidence submitted that there are grounds for revising the general opinion that the rapid conversion of medical students from tuberculin negative to tuberculin positive during their hospital studies is solely the result of their contact with *living* patients. Tuberculous *post-mortem* material must be regarded as a source of infection." So far as *post-mortem* examinations by veterinary surgeons are concerned, I am sure my colleagues will agree with me when I say we carry out these examinations under conditions which would appal our medical friends. I cannot say with any degree of certainty, but I understand that in many medical schools these examinations are made under conditions which leave much to be desired.

Anthrax

I think I ought to mention that during the last few months there has been an appreciable rise in this country in the number of confirmed cases of anthrax.

The following figures speak for themselves :—

During the period January 1st to March 15th, 1950, 104 outbreaks were confirmed and 112 animals were attacked.

For the corresponding period in 1949 the figures were 34 and 34 ; 1948, 25 and 26 ; 1947, 15 and 16 ; 1946, 26 and 26.

The increase in the number of cases is, I think, directly linked up with the increased importation of feeding stuffs and fertilisers. So far as we veterinary surgeons are concerned, it behoves us to be on our guard when sudden or unexplained deaths occur on a farm. So far as the medical profession is concerned, when a case of anthrax is confirmed on a farm, a notification to that effect is sent to the M.O.H., but I would suggest that doctors bear in mind that there is an increased risk of anthrax appearing in their patients at the present time.

Rabies

In conclusion, may I touch very briefly on rabies. It is one of the oldest diseases known to mankind, and there are records of the human form in the 13th century B.C. Rabies in the dog is mentioned by Confucius about 590 B.C.

This country was free from rabies from 1902 to 1918 when a dog smuggled in by troops returning from the Great War reintroduced the disease and it was not until 1922 that the country was clear again.

The necessity for the rigorous enforcement of the six months' quarantine period is justified by the fact that from time to time rabies appeared in quarantine stations and since November 1946, nine cases have been confirmed, and in most of them one or more of the kennel staff have had to undergo the Pasteur treatment as a result of their exposure to infection.

May I give you the history in the last two cases :—

1. A five-year-old bull terrier bitch was landed from Burma on February 8th, 1949. On March 18th the animal was " off colour " and slight lameness was noticed. On the morning of March 20th the animal was weak on the hind legs, the temperature was subnormal (100·5) and there was slight dropping of the jaw. At 8 p.m. the dropped jaw was more pronounced, and the bark was hoarse. On March 21st the hind legs were very weak and there were indications of partial paralysis ; attempts to bark only gave rise to a faint yelp, emitted from the back of the throat ; the eyes were glazed and sunken and the dog died during the night of March 21st/22nd. On *post-mortem* examination straw was found in the throat and oesophagus ; there were no foreign bodies in the stomach, which was empty except for a little bile. Slight gastritis was present and the spleen was enlarged ; the other organs were normal.

According to the owner, the Burmese history of the animal was as follows. The bitch was acquired as a puppy and all its life had lived at Moulmein. She had received anti-rabic vaccination some four times, the last injection being about two years before. Normally, the bitch was not allowed out by herself but in May or June, 1948, she was away for an hour or two. (Incidentally, there is a general belief among the Chinese that dogs become rabid during blossom time in April and May. This may be due to the fact that at that time of the year a number of bitches are in oestrum and a single bitch may have up to 20 followers or even more. One rabid dog at such a " party " might well be responsible for a large number of cases of rabies.)

When the bitch returned she had several wounds on her head which the owner attributed to bites and he dressed the wounds with iodine. Local enquiries failed to suggest any clue as to the origin of the wounds or bites.

2. The second case is this—a crossbred terrier which was landed in Great Britain from the Gold Coast on October 10th last died of rabies after being in quarantine for *little more than* 24 *hours*. It is reported that several persons had been bitten by the dog during the voyage to this country and that a dog on board the vessel was also attacked. Between the time of arrival at the quarantine kennels and its death, the dog bit a kennel attendant.

But for the Quarantine Regulations any of the nine affected animals might have been the cause of a series of outbreaks of rabies among British dogs and had such outbreaks occurred there would have been a grave risk to the human population. It should be added that the Ministry of Agriculture and Fisheries notify the Ministry of Health of any suspicious case in the country, and keep them posted as to what is happening. Consequently, the moment a case of rabies is confirmed, the Ministry of Health can forward sufficient vaccine to doctor or hospital for use forthwith, and frequently the first " shot "

is given on the day of confirmation and seldom later than the next day.

There is no legal method of avoiding quarantine. Cats and dogs belonging to all classes (even the highest in the land) go into quarantine as did the two Rhodesian Ridge-back Lion Dogs presented to H.M. the Queen when visiting Rhodesia in 1947. Quarantine is one of the very few matters upon which this country refuses to admit "diplomatic privilege" and the dogs and cats of Ambassadors must undergo it.

. . . . .

II: By FRANK CHAMBERS, O.B.E., F.R.C.V.S., Wolverhampton

The domestication of animals, resulting in a close relationship of man and animals which gave a new scope to various diseases, has created an important medical problem. There are quite a number of diseases which affect animals and which are communicable to man but there is not time to-night to give a detailed account of them. Communicable disease, transmissible from animals to man, parasites embracing both man and animals in their development and the poisoning of man by contaminated meat become most important.

In planning measures for the control or elimination of these diseases there must be considered the essential fact that they present the same danger to man as to animals, thus attracting the common interest of both veterinary and human medicine. It is being realised more and more every day that the medical and veterinary professions must co-operate more closely if headway is to be made in controlling or even eradicating certain diseases in man.

My colleague, Mr. Scott, who is the D.V.O. for Worcestershire, has dealt with the subject from the State medicine point of view.

I do not suppose that there are many in this room who have seen a case of glanders in man and yet only 50 years ago this disease was not uncommon in this country. Slaughter of affected animals and the mallein test, coupled with strict import regulations, have stamped out this disease but it still exists outside the British Isles. With the gradual extinction of the horse I do not think that we shall ever see this disease again in this country. In man the disease often went undiagnosed until the patient reached the *post-mortem* room.

Brucellosis, leptospirosis, tularaemia, the variolas, scabies and ringworm are all communicable to man.

Brucellosis.—During recent years much has appeared in the scientific press in connection with the transmission of *Brucella abortus* to man. *Br. abortus* is one of the chief causes of contagious abortion in cattle and once the infection is introduced into a clean or non-inoculated herd it spreads with great rapidity, causing 70 to 80 per cent. of the cows to abort about the seventh month of pregnancy. The placenta is nearly always retained with most unpleasant and often serious results. There are three well-defined species of the Brucella group—*Br. abortus*, *Br. melitensis* and *Br. suis*. The last mentioned has not been detected in this country. The three species are too closely allied to be separated by ordinary agglutination tests. Goats do not appear to harbour *Br. abortus* and as far as this country is concerned it would seem that the consumption of goats' milk can be encouraged without undue risk.

In 1917 Alice Evans reported on the resemblance of *Br. melitensis* to *Br. abortus* and it was not until 1922 that *Br. abortus* was recovered from a patient in the John Hopkins Hospital in Baltimore. Soon after, came reports from numerous countries and it was Ll. Bevan, the Veterinary Bacteriologist in Southern Rhodesia, who showed that blood from a man in Salisbury Hospital agglutinated *Br. abortus* in a dilution of 1 : 200.

It is well known that veterinarians are far more liable to infection than are members of any other occupational group in close contact with domestic animals. You are probably all familiar with the allergic reaction on the arms of those who come into close contact with *Br. abortus*. Unfortunately, although a cow may not abort, yet she may be a carrier and in a small percentage of cases may excrete the organism in the milk. The culprit can only be found by doing a biological test on every cow that is milking in the herd. If a case is found during the routine sampling of milk the producer must have all the milk heat treated before sale. This seems to be a reasonably preventative measure, but it does at times cause inconvenience and expense, especially if the owner is a producer-retailer.

The relative infrequency of clinical undulant fever in persons who are exposed to risk of infection is explicable on one or more of the following grounds :—

1. That the organism has only a low degree of virulence and is incapable of infecting humans unless their resistance is unduly lowered.
2. That only a small minority of strains are of sufficient virulence to invade the body.

Some years ago the Ministry of Agriculture had a sudden passion for destroying herds that were supposed to harbour a carrier of *Br. melitensis*. After one bad spasm they must have listened to wiser counsels and the urge soon died a natural death.

Leptospirosis.—This is a disease confined mainly to the dog although cases have been described in the horse and only recently two large outbreaks amongst cattle in the U.S.A. have been described.

In the dog the usual organism is the *L. canicola*, but the very acute cases may be due to the *L. icterohaemorrhagica*. Dogs catch the infection by sniffing where rats have urinated or eating from vessels that have been soiled with rat urine. In this country it is said that 30 per cent. of rats harbour the parasite without any harm to themselves. In a very comprehensive article which appeared in the *Cornell Veterinarian* in 1948, Monlux showed that of 100 rats used in a survey, 55 per cent. had leptospira in the kidneys, and that 23·07 per cent. of the farm rats and 49, or 66·2 per cent., of the dump rats harboured leptospira in those organs. The incidence of the leptospira in the rat varied with the location of the dump. Nearly all the rats obtained in one area were positive. If there is plenty of food rats will migrate very little.

Leptospira can produce a host of most unpleasant effects in the dog. The acute cases take the form of acute gastro-enteritis, rapidly proving fatal or ending with a uraemia. If the seat of predeliction is the liver (subacute form), marked jaundice (of a bright orange colour) is the result. We think now that the numerous cases of chronic nephritis in the dog seen between the ages of seven and ten are due to damage done to the kidneys at some time by a "cold" type of leptospirosis during youth. This is borne out by a series of agglutination tests that were done in Glasgow, two years ago, on cases of chronic nephritis in the dog, in which 90 per cent. were positive.

The disease is much more common in the dog than is generally supposed and in the *British Medical Journal* for February 11th of this year a very good article appeared on an outbreak of canicola fever among humans in Bristol. There the authors showed that infection in the patient could be traced to contact with infected dog's urine. This goes to

show the danger of handling these cases. Personally I never previously considered that there was any danger from dog to man and I cannot but think that the standard of personal cleanliness in the people concerned in the cases recorded by Campbell and his colleagues cannot have been very high.

However, it is a point for all of us to remember and I for one, when dealing with cases of canine leptospirosis in the home, will advise strict sanitary measures and more than ordinary care whilst handling the patient. As rats are the primary cause of leptospirosis it seems reasonable to suggest that the greatest effort in control of this disease should be made to eliminate the rat.

Recently a case of orf (contagious pustular dermatitis of sheep) has been recorded in man. The authors, Blakemore, Abdussalam & Goldsmith, writing in the *British Journal of Dermatology*, describe a human infection which developed about a week after contact with infected sheep, and lasted about seven weeks. Scab extract from the lesions produced typical C.P.D. in a normal lamb. This disease is common in lambs and sheep, but I have never met a shepherd who, when dressing these cases, complained that he had contracted the disease.

Skin affections, such as ringworm, contracted from cattle and occasionally cats are frequently seen, and those cases that are contracted from cattle seem to take a long time to clear up. I wage a constant warfare against calf ringworm and never fail to impress upon those handling affected calves the danger of transmission of the disease. The strange thing is that even badly affected calves that have caught the disease whilst housed in the first five or six months of their lives clear up without treatment when turned out to grass. In the town, cats are the culprits and the lesions on these animals may be so small as to escape detection.

Sarcoptic scabies contracted from the dog is also a source of much trouble and many a case in man is undiagnosed and called everything except scabies until eventually the patient tells the practitioner that her dog is being treated for mange. Scabies contracted from dogs, although the lesions may be widespread, is cured fairly easily.

There are quite a number of systemic fungous infections in animals, such as histoplasmosis (*H. capsulatum*), that are transmissible to man. Cases have been recorded all over the world but they are so few that they need not cause us much concern in this country. Sporotrichosis also comes under this heading.

Variola (cowpox) and the other animal variolae are capable of attacking man, producing a mild to more or less severe eruption of the skin.

Swine erysipelas will attack man and the chief victims are veterinary surgeons and labourers in abattoirs who handle sick animals or the carcases of animals dead of the disease. Frequently these cases are fatal.

Pasteurella avicida, the cause of fowl cholera, can also attack man, producing abscesses, whilst the consumption of the meat of affected fowl can cause gastro-enteritis.

Echinococcosis is transmitted from the dog. The tapeworm, which is a very small one, affects dogs and cats and hydatid cysts come from the ingestion of the eggs of this parasite. The tapeworms of man (*T. saginata, solium*, etc.), contracted by eating infected beef or pork and (often fatal) trichinosis (from eating infected pork) constitute the main parasitical diseases embracing both man and animals in their life cycles. Luckily, owing to our fine system of sewage disposal, we are not bothered too much with the presence of these parasites, but it behoves those in charge of meat inspection to keep an ever watchful eye for cysticercus infection.

This is but a brief summary of a few of the conditions that we are liable to pick up from animals and when perusing current medical and veterinary literature I often wonder why we are able to exist at all.

. . . . .

Mr. J. S. M. Connell, F.R.C.S., who had opened the discussion of the subject before the joint meeting, explained that his interest in this work of the veterinary surgeon was recent and stimulated by necessity when the animals on his own farm became afflicted with mysterious and serious diseases. Contrasting the circumstances in which the veterinary surgeon, as compared to the doctor, did his work, he drew attention to two marked differences. The veterinary surgeon had to work without such information as the patient's own account of his symptoms and conscious co-operation in examination. Also in veterinary practice, the value of the animal weighed against the cost of the treatment, or danger of the disease, whilst in human medicine such was not the case.

Dr. K. S. Thompson, speaking as a pathologist with a keen interest in comparative medicine, drew particular attention to the importance of tuberculosis, brucellosis and echinococcosis as diseases requiring the closest co-operation between the veterinary and medical professions, if danger to man from these infections was to be eradicated. With regard to tuberculosis, the possibility was stressed and borne out by cases in Dr. Thompson's experience of tuberculosis being conveyed by a herdsman with open phthisis to the cattle with which he had contact.

The Reply

Major Chambers, who replied to the discussion both on his own behalf and that of Mr. Scott, thanked the Birmingham Medical Society for the kind way in which they had received their efforts and for the excellent discussion which had taken place.

Each animal had its own type of sarcopt, but the canine and equine variety could and did infect man. It was the speaker's opinion that scabies from the horse was very difficult to cure when one got infected; only very energetic measures could effect a cure. He found that an ointment of biniodide of mercury in lard, 1-8, was effective and only one dressing was needed.

The fact that *T. saginata* was more prevalent in man than *T. solium* was probably due to the fact that pork was always well cooked and not eaten underdone as was beef in the large majority of cases.

It was well known that "scours" in small unweaned pigs was due to some type of iron deficiency, and that the administration of various types of iron is of no value, but turning out to grass the little pigs or even the mother, soon stopped this condition, and recovery took place.

The fact that dogs were more prone to leptospirosis was probably due to the fact that they were more apt to indulge in sniffing in various places than was the bitch.

Of recent years it had been shown that the incidence of tuberculosis in man had increased alarmingly in those areas where there had been a large increase in the number of tubercle-free herds. This rather pointed to the fact that the ingestion of milk containing tubercle bacilli might give a high immunity against pulmonary tuberculosis.

Weekly Wisdom

The mistake of the materialist was that he doubted what was certain; the mistake of the dogmatist was that he would perpetuate that which was uncertain. The first tried to believe and to teach that the universe had no meaning; the second tried to believe and to teach that the universe had his meaning. The finality of both those dogmas was a betrayal of truth. It was folly to try to hand down either despair or superstition.—Dr. C. J. Wright, addressing the Modern Churchmen's Conference at Cambridge.

IMMUNISATION AGAINST RINDERPEST BY LAPINISED VIRUS

BY

H. C. WATSON, M.R.C.V.S.,

Hong Kong

In Edinburgh, Kabete and Onderstepoort I have at various times since the war been privileged to consult such authorities on rinderpest as Sir Daniel Cabot, Mr. R. Daubney, Dr. R. A. Alexander, the staff of the East African Veterinary Research Organisation and the veterinary staff of the Food and Agriculture Organisation regarding immunisation against this disease. To those gentlemen, and in view of the paucity of literature on this subject in the British veterinary press, to others who are faced with the problem of immunising against rinderpest highly susceptible dairy cattle, the following notes may be of interest.

1. During April and May, 1950, there arrived in Hong Kong from the United Kingdom at intervals in four ships: 46 Ayrshire heifers, two young Ayrshire bulls and two Friesian heifers.

With the exception of the two Friesians, and a small percentage which calved at sea, all the females were advanced in pregnancy.

All those cattle were vaccinated within one week of arrival in Hong Kong with lapinised virus produced by the Institute of Pathology of the Hong Kong Government. The availability of the virus is due to the work done by the veterinary staff of the Food and Agriculture Organisation first in Nanking and later in Bangkok, and to the good offices of Mr. G. G. Alton, B.SC., M.R.C.V.S., who brought the virus from Bangkok to Hong Kong.

It must be admitted that, in view of the high susceptibility *and* high cost of those animals, the decision to use lapinised virus to immunise them was not arrived at without some trepidation. (The previous method of immunising the 1,400 dairy cattle of European breed in this herd was the expensive and cumbersome though safe and reliable one of inoculating biannually "tissue" vaccine obtained from the Pasteur Institute in Nhatrang, Indo-China.) Consequently the first batch, consisting of 15 Ayrshire heifers, was treated with 400 c.c. of anti-rinderpest serum (Muktesar-Kumaon, April, 1949) *not* simultaneously with the virus but immediately it was established that a febrile reaction was occurring.

Apart from fever on or after the third day after inoculation, those 15 animals passed through the immunisation uneventfully. Consequently the second shipment—12 Ayrshire heifers—was given only 200 c.c. of serum on rise of temperature, and when it became evident that they also showed no ill effects, the cattle in the remaining two shipments were given no serum whatever.

The following is a summary of the nature of the thermal reactions exhibited:—

3	cattle	showed fever of	1° F. or less.
7	"	"	1 to 2° F.
11	"	"	2° to 3° F.
19	"	"	3° to 4° F.
8	"	"	4° to 5° F.
2	"	"	more than 5° F.

Along with those adults, seven of their calves, aged about one week, were vaccinated, and showed similar rises in temperature, together with, in two cases, inappetence and diarrhoea. Apart from this, no signs of sickness were noticed and no abortions occurred.

(*Concluded at foot of next column*)

2. Fifty-four locally born calves aged three to six months, of Ayrshire, Friesian and Jersey breed, not previously immunised against rinderpest by any method, were inoculated with lapinised virus. Within two weeks almost all of those calves showed fever of greater or lesser degree. A few calves suffered from diarrhoea: two, one of which died, showed typical mouth lesions.

I have discussed with several workers the question of "immunity—or no immunity—without reaction." I must record my complete satisfaction with the above operations in that with very few exceptions the febrile reaction was very evident. As to the length of immunity conferred, time alone will tell, but I am optimistic enough to hope that this immunity will last for years if not for life. It is intended to challenge with bovine rinderpest blood from time to time a proportion of animals vaccinated with lapinised virus.

Note.—As this farm is in close proximity to the laboratory, fresh virus can be used readily. Dosage is as recommended by Mr. Alton. In these inoculations material derived from the 879th passage *et seq.* was used.

EXPERIENCES IN THE ANTARCTIC *

BY

G. S. BEATTIE, M.R.C.V.S., D.V.S.M.

I want first of all to give you an outline of the happenings which led to my term of duty in the Antarctic, then a summary of the practices of whaling.

The shortage of meat, both during the war years and afterwards, was the factor which encouraged one whaling company to experiment with the possibility of using the whale as a source of meat for human consumption. The whale, of course, is a mammal and its flesh has been eaten fresh by the personnel of whaling ships for a long time. It was felt that if some of the enormous quantity of meat handled each season by the whaling fleet could be preserved and brought back to Europe then a substantial contribution could be made to the larder. Accordingly, in the whaling season 1946–47 a total of 50 tons of meat was frozen at sea and brought back to this country. On arrival it was seized by the Port Health Authorities who held it for some considerable time while the various aspects of importing whale meat for human food were discussed. As the British Government had no authority to inspect the meat when it was caught in the Antarctic, it was arranged after negotiation, that a veterinary surgeon should accompany the whaling fleet and he would be available to advise the company who, for their part, would act on his advice as far as it was practicable to do so. I was the person selected to attempt this task and I was loaned to the Ministry of Food to act as an observer and an adviser but held no executive position on board.

It is necessary to realise that whaling is controlled by the Norwegians and although we sailed on a British ship under the British flag the majority of the personnel were Norwegian. This monopoly was achieved when whaling took place in the Arctic and was maintained when the site of operations moved to the Antarctic as the Northern grounds became fished out and the whale became almost extinct. At first whaling vessels were converted oil tankers but now the modern whaling factory ship has been evolved. Such vessels are essentially oil tankers with a superstructure fitted in such a way that it

* Address (illustrated by a film) to the Yorkshire Division, N.V.M.A., at Leeds, April 28th, 1950.

includes all the equipment necessary for the manipulation and processing of whales. They can operate for long periods, as much as five and a half months at a time, without touching land.

Soon after Pelagic whaling commenced in the Antarctic it was realised that there was a risk of whales becoming extinct and in 1930 an international conference on whaling was held. From this arose the International Whaling Commission whose chief function is to make regulations which are aimed mainly at conservation of the stock of whales. In order to give effect to these regulations each Government which was represented on the International Commission has passed legislation which, in the case of Great Britain, is set out in the Whaling Ship Regulations. In these, areas have been defined where fishing is allowed and the types and sizes of whales to be caught are laid down. As the length of a whale is in direct relation to its age the defining of minimum length ensures that the whales taken are mature. For example, in the case of the blue whale the minimum length is 70 ft. An over-all target is also laid down for each year and this regulates the total catch. In order to do this a blue whale unit has been evolved which makes one blue whale equivalent to two fin whales and to two and a half humpback whales. The over-all figure for 1947–48 was 16,000 blue whale units. A close season has also been instituted and this lasts from April to December, *i.e.*, the southern winter. Fishing takes place from December to April or until the 16,000 units are caught. Another stipulation is that lactating whales shall not be taken. This may seem difficult to observe in practice, but it is assumed that if a whale is seen with young in attendance then it is a lactating female and no shooting takes place. In order to ensure that the regulations are carried out penalties are imposed and these start at the gunner. All of the employees are on a bonus system of payment and if the gunner shoots a whale which is protected by the regulations then the payment is withheld.

The life history of the whale has been ascertained by much work on the part of the Discovery Committee. It appears that the whale feeds at the ice barrier in the southern summer and goes to the tropical waters to breed, but while there does not feed. At the beginning of the following whaling season they are therefore thin and poor but by the end of the season they have attained their maximum degree of fatness. In the case of the toothed whales, such as the sperm whale, the food is in the form of cuttle fish, octopi, etc., and sperm oil is consequently more like a wax than an oil. It is non-edible but is of importance to the cosmetics industry in the preparation of its products. The non-toothed whales, which include most others, are the baleen whales and they live on small crustaceans about the size of large shrimps. It seems incongruous that such a large animal should exist on such small prey but the whale fills its mouth while swimming and then expresses the water through the baleen plates which form a sieve and when the food has thus been strained out it is swallowed. It also would appear a difficult matter for such a whale to swallow a man through its relatively small pharynx.

The gestation period of the whale is eleven months and calving takes place in the warm equatorial waters. Suckling is continued for seven months and the foetus—the largest one I measured was 23 ft.—doubles its size in this period. The udder is subcutaneous and is found in the mature female in the form of two oval glands approximately 6 ft. × 2 ft. 6 in. which lie each side of the vulva. The procedure and mechanism of suckling has given rise to considerable speculation but it seems likely that the teats, which lie in two slits near the vulva, normally are hidden and have an erectile structure which plays its part in the process. The milk on analysis has been found to have a butter fat content of something like 33 per cent., a figure which led to the facetious but ingenious suggestion that instead of catching and processing whales to make margarine they should be rounded up and milked to obtain butter. In the case of the bull whale the testicles are intra-abdominal. It is of interest that the efficacy of the control on the types of whales caught is such that of the 2,500 whales taken on my trip only three were lactating.

So much for the background to the industry and now to describe my own personal experiences. I joined the factory ship at Belfast in September, 1947, and signed on as an Ordinary Seaman. This was necessary to satisfy official procedure. We sailed with a skeleton crew to Norway to pick up the whalers and the rest of the crew. Three days were spent at a Norwegian port and considerable quantities of stores, wooden planking whose use is to be described later, guns and other equipment were taken on as well as the men. It seems that many Norwegians sail with the whaling fleets, leaving the womenfolk to look after the farms during winter. In summer the men are at home and live the life of farmers. After leaving Norway we called at the Canary Islands in order to bunker at one of the few free ports left in the world. The port was Las Palmas which impressed me as being on one of the most barren, inhospitable islands it is possible to imagine. On crossing the line, King Neptune came on board and the novices were appropriately initiated. Schools of flying fish were seen but I was impressed by the barrenness of wild life in the tropical seas whereas in the Antarctic, surprisingly enough, the direct opposite prevailed. The ship sailed steadily at 14 knots and the men worked hard all the time, splicing ropes and working with the large quantity of 4-in. by 2-in. planking taken on in Norway. This was laid down to form a false deck, extending over most of the ship, designed as a floor on which the operations of whaling could be carried out.

Cape Town was reached at the end of October and time was available for a fairly thorough exploration. The town itself seemed more American than British as evidenced by the types of cars and clothes seen. It was especially attractive to us, for the unrationed food, sweets, etc., were in strong contrast to Britain. A trip was made by road to the southernmost tip of Cape Point, about 100 miles away. The drive itself was through interesting scenery though much of the land was barren and there was an absence of farms. I saw the municipal veterinary surgeon in Cape Town and it seemed that his problems were very similar to those at home. His position was comparable to that of the city veterinarian in Britain, pre 1938, and his interests were predominantly with milk and meat. I also met an official whose position would correspond to that of the British Superintending Inspector. He was in charge of a large area and apart from the ever-prevalent East Coast fever, talk seemed to be mainly of a new disease called lumpy skin disease, which does not correspond with skin tuberculosis but seems to be caused by a virus. The cattle I saw were mainly Friesians and they were on grass which was very brown and poor by any standards.

We left Cape Town on November 1st, 1947, to form a fleet of 16 or 17 vessels including the factory ship, nine catchers, two corvettes and three buoy boats. It is noteworthy that there were in all 17 similar expeditions also operating that season and that to equip one such expedition an outlay of £1,000,000 is required.

After leaving Cape Town " no shaving " was the rule and the final adornment accumulated between then and the following April served a very useful purpose in the worst of the weather. The roaring 40s were traversed in comparative comfort going south and in a week's time we came to the ice barrier. The albatrosses had by now been left behind and speculations were common about the area where we would

fish. The venue of operations was a closely guarded secret and was decided by the captain alone. Ice floes were in abundance and we found ourselves turning east and from 56°S we fished as far as the mouth of the Ross Sea which brought us by the end of the season to a point south of New Zealand. All this time the ice barrier was kept in view and periodically icebergs were encountered. These were of varying size, the largest we saw was 18 miles long, the highest was 200 ft. They separate from the polar ice cap, drift to warmer waters and there split into smaller ones by a process known as "calving," but happily no obstetrical attention is required. Originally they are quite flat and form a plateau but after melting and calving they turn over and the topography becomes quite irregular; fantastic shapes are then produced. Sometimes as many as 50 bergs would be counted and it is interesting to observe how the Norwegians use them as shelter. Being mainly in the water they move with the current and their lee side affords considerable protection in storms. The bird life was terrific and seals and penguins were also very common and seemingly almost impossible to frighten.

The main purpose of whaling is to obtain oil for margarine and this is derived from the baleen whales. However, before the season for these opens the time after arrival at the fishing grounds is spent in catching sperm whales which can be caught outside the close season. This is useful in that the whole mechanism of whaling is given a trial run, so that at 12 o'clock midnight on the opening date whaling starts in earnest. From then until April work carries on for 24 hours a day in two shifts of 12 hours, each running from 6 o'clock to 6 o'clock. The factory is stopped on Christmas eve from 4 p.m. till midnight for the traditional festivities. Sundays are distinguished from weekdays by the issue of a bottle of beer for dinner.

The catching of whales is carried out by a fleet of boats each of about 200 tons. Each catcher is controlled by the gunner who hunts in a radius of some 100 miles from the factory ship and returns every four or five days to the parent ship for refuelling. Usually a whale is first spotted by a man stationed in a "crow's nest" consisting of a barrel mounted high up on the mast. After spotting great skill is required to manoeuvre the boat into position—direction being given in the last stages by the gunner on his platform to the steersman. The blue whale is capable of 12 knots, which is about the speed of the catcher, and when a whale submerges it goes down for a period which may be as great as 20 minutes. When in position the gunner fires his harpoon, weighing about 1 cwt. and carrying a rope about a mile long—the first length of which is made of nylon. The harpoon has flanges which lock it in position and an explosive war head which explodes on penetration scattering shrapnel and killing the whale if well aimed. If the whale is killed outright it sinks and is hauled up by the rope. If it is only wounded a terrific struggle ensues and to avoid damage to the propeller the engines are stopped as soon as the gun is fired. The whale may tow the boat for miles and at the first opportunity a further harpoon is fired. This usually proves fatal. Various attempts have been made from time to time with methods of electrocution but a reliable method has not yet been evolved.

When the whale is dead and brought to the side of the ship the first job is to insert a pipe through the abdominal wall in order to inflate it with compressed air to render it buoyant. It is then either cast adrift with a flag and a small lamp near to a prominent iceberg and the factory ship informed by wireless so that it can be picked up later by a corvette, or the catcher may take the whale back itself. The whales are lashed by the tail to the side of the vessel and the catcher can take four whales each side. At the factory the whales join the queue and are dealt with in rotation. It is easy to see that if delay occurs at this stage the meat will not be fit for use.

The factory ship takes each whale in turn on to the after deck via the inclined slipway at the stern. This deck is the flensing deck and it is here that the whale is skinned, the blubber stripped off in strips 3 to 4 ft. wide, the cuts being made by the long-handled flensing knives and the strip pulled by a winch. The animal is then turned over and the blubber taken off the other side and the strips of blubber passed down manholes to the pressure boilers where the valuable oil is extracted. After this the carcase is hauled to the forward deck and dismembered. First the lower jaw is taken off and then the head and upper jaw, which are cut by the bone saws so that the whole of the skeleton can be passed piecemeal to the boilers. The only parts of the carcase which are not used are the baleen plates and the intestines which are dumped overboard. It is part of the whaling regulation that the remainder of the whale has to be utilised—a regulation designed to slow down catching

After the head is removed the ribs on the uppermost side are severed, a wire hawser is attached to the flipper and the whole of the thoracic and abdominal contents are pulled forward, muscular attachments being cut by the men with their flensing knives as necessary. It is easy to imagine the condition of the false deck after a very short time. The livers are used for their vitamin A content—as the whale liver has a much higher content of vitamin A per gramme than either cod or halibut. Each liver weighs about one-third of a ton and has a cash value of about £100. Next the longissimus dorsi muscles are removed, leaving the backbone lying on the deck. The latter is then dragged to the bone saws where it is cut into pieces suitable for the boilers. The ribs are then separated into pairs and are dragged to the boilers by the united efforts of three men. One kidney which was weighed was found to be 175 lb.; it was 6 ft. long and consisted of approximately 1,700 lobules. The bones contain an average of 7 per cent. of oil, and while the meat may have only 0·5 per cent. oil at the beginning of the season, by the end of operations the content may have arisen to 15 per cent. It takes about half an hour to dispose of one whale, though a large one may take three-quarters of an hour, and the best production we had was 41 whales in 24 hours.

If the meat is not suitable for freezing it is minced and from the liquor an extract like bovril is obtained. The bulk of the meat is dried and used as a meal for cattle, selling at £40 a ton and consisting of some 90 per cent. of protein. The meat for freezing is obtained in fillets from the two psoas and the two longissimus dorsi muscles, each weighing about 2 tons. The procedure adopted was to raise this meat to a deck on a higher level where a more adequate standard of cleanliness could be attained. Each piece of meat was hosed down and then trimmed to clean off the contaminated parts. Bacteriological examination of wholesome meat compared favourably with meat slaughtered in this country. The health of the whales is of a high order, a few parasites being noted—ascarid worms in sperm whales and tapeworms in the baleen whales. An odd injury with a resultant abscess was found from time to time—one such abscess weighed 56 lb. The bugbear of getting good meat was, of course, the long towing times, as, for example, when the whale was 24 hours in the water after catching. Although the sea is at a temperature of 31° F. the blubber retains the heat and putrefaction is fairly rapid. Experiments to allow cooling by opening the abdominal wall soon after catching have not proved satisfactory.

The whaling companies are interested primarily in whale oil and as a by-product meat has to take a secondary place. As a result, putrefaction and its recognition became the main problem rather than disease, but after trial and error workable standards were evolved. The meat selected is frozen in

moulds of convenient size and afterwards the pieces are wrapped in stockinette and jute bags. Four hundred tons can be stored on the factory ship and the procedure is to convey it in lots of 50 tons by ferry boat to a refrigerator ship lying near by.

At the end of the season we were south of New Zealand and it took three weeks' steaming to reach Cape Town. During this time the false deck was ripped up and thrown overboard and it was strange to see the ship's course marked by a line of floating wreckage. From the mast to the water line the ship was then scrubbed with caustic soda solution, even in terrible weather when passing through the roaring 40s with one storm lasting 24 hours and the waves 60 ft. high. The ship was 20,000 tons and did not roll much but she pitched a good deal. The cleaning-up process continued all the way home and on arrival in this country the ship had been repainted completely.

It was not possible to obtain very much information about the anatomy of the whale before the trip, so this had to be picked up as one went along. One thing one learns very early in the season is that the essential requirements for any purpose include three men and a winch. Little can be done by hand. The temperature of the whale has been obtained immediately after death by a naval frog-man who thrust a spear thermometer into it and obtained a recording of 94·5° F. The meat of whales varies in colour according to breed and age. That of the sperm whale is a deep purple, almost black, but this meat is not particularly palatable: only males are found in the Antarctic and it is thought that they are old ones driven out of the pack. The meat of blue whales is a glistening purple and that of fins is similar. It may be tender or tough according to age as in other animals, but whale meat selected from suitable whales and handled in a hygienic manner can be excellent. Preservation over long periods raises other problems but these are now being investigated.

BIOLOGY AND CONTROL OF COCCIDIOSIS

"The range of parasitology nowadays is so wide that anyone choosing to work on it soon finds that he must not only have a very broad scientific training, but must also restrict his studies to one field, or even to one genus of parasitic animals. If he be interested in the Protozoa, for example, he may well find that the study of coccidiosis, or even the study of the economic aspects of this disease, will occupy all his life.

"For anyone interested in this subject, the conference on coccidiosis convened by the New York Academy of Sciences,*" observes *Nature*, under the heading reproduced above, in its issue of August 19th, "provides a sound synoptic view of it. Prefaced by a photograph of, and a short article by, Professor E. E. Tyzzer, whose classic researches on the coccidia of hen chickens and other birds established the study of coccidiosis for the first time on a scientific basis, the proceedings of this conference cover most aspects of the biology of the species of coccidia considered, their host-parasite relationships and most of the methods used to control the diseases that they cause. The importance of their control is shown by the estimate worked out by one contributor that coccidiosis of poultry costs the United States $10,000,000 a year, coccidiosis of cattle the same figure and coccidiosis of sheep $500,000, while the disease in goats, pigs, dogs, cats, rabbits and fur bearers adds another $500,000 to the cost. The total cost of the disease in the United States is thus $21,000,000 a year.

"It is impossible to summarise in a short space the wide range of this conference. It provides a valuable epitome of every aspect of the subject, and articles on the chemotherapy of the disease and on its nutritional aspects illustrate well the degree to which the parasitologist nowadays has to be, or has to try to be, a biochemist. Although most of the work is American, British research is represented by the article, contributed by Dr. C. Horton-Smith, on factors which influence the origin and course of epidemics of coccidiosis in poultry. The bibliographies appended to each article are a valuable feature of the publication."

* *Annals of the New York Academy of Sciences*, **52**, Art. 4: Coccidiosis. By S. Blackett and 42 other Authors. Pp. 429-624. (New York: New York Academy of Sciences, 1949.) $3.

CLINICAL COMMUNICATION

"CARICIDE" IN THE TREATMENT OF *DIROFILARIA IMMITIS* IN ZANZIBAR

JOHN C. ALLEY, M.R.C.V.S.,

Veterinary Officer, Zanzibar

During the past two years, some six dogs were brought to the veterinary clinic, suspected by their owners to be suffering from pneumonia. All showed typical pneumonic symptoms. Of these six, four were in a very debilitated condition, and were past the stage when treatment would have been of use. They were destroyed and *post-mortem* examinations were carried out. In each case, a large number of *Dirofilaria immitis* were found in the right ventricle of the heart. Pneumonic lesions were also present in the lungs, and one case showed ascites.

In January, 1950, a nondescript mongrel was brought in for treatment, the history being chronic cough and loss of condition. Numerous micro-filariae were found on blood examination. Owing to the lack of any specific drug, an injection of 1 c.c. of a 10 per cent. solution of antrycide methylsulphate was given. Subsequently, no microfilaria were found on blood examination, the animal improved in condition, and was discharged after two weeks, presumed to be cured. I mention this case for what it is worth.

In April, 1950, a mongrel terrier-type dog, used for hunting pig, was brought in. As before, the animal was showing pneumonic symptoms. Microfilaria were found to be present on blood examination. Having read, in a recent copy of *The Veterinary Record*, Dr. Purchase's article on the treatment of *Dirofilaria immitis* with "Hetrazan," I wrote to him, and duly received some "Caricide" from him to try out. This drug was administered at the rate of 5 mg. per kg. body weight, and treatment spread over ten days, the drug being given twice daily for the first two days, and then thrice daily for the remaining eight days. After the third day, blood examination proved negative. On subsequent examinations no filaria were found, the animal improved in condition and the cough disappeared, and it is now, to all appearance, in perfect health.

I wish to record my thanks to Dr. H. S. Purchase, Chief Veterinary Research Officer, Kenya, who supplied me with the "Caricide" used in this case. "Caricide" is produced by the Lederle Laboratories Division, American Cyanide Co.

ECOLOGICAL SABOTAGE?

A recent article in *The Times* described the occurrence of a large number of alien plants in a bomb crater near Box Hill. So far 20 plants have been noted and the list grows, the latest addition being a yet unidentified gentian. In our student days, a lecture on the dispersal of fruits and seeds was a light relief from the arid difficulties of plant anatomy but even then there was no suggestion of high explosives taking part in this work. This solution of the origin of the newly noted plants is rejected by *The Times* correspondent, although some of the plants found have their habitat in the lands in which the bombs were made. Foreign foxgloves have been found at some distance from the crater and the balance of evidence is strongly in favour of a practical joker. Perhaps, however, some misguided botanist may be sowing material for a future thesis. It is to be hoped that the individual concerned will take care to avoid dropping, even in this secluded spot, seeds of plants which are harmful to either children or animals. Poisonous plants which are not known in Britain may well prove dangerous to the unwary and there are many factors, apart from man, which influence dispersal.—*Pharm. J.*

ABSTRACTS

[The Animal Protein Factor in Poultry and Swine Nutrition. (1950). Compiled by the Animal Feed Department, Lederle Laboratories Division, American Cyanamid Company, New York, pp. 29. (51 refs.).]

The relationship between bacteriology and nutrition, and the applicability of recent laboratory findings to practical animal feeding, are both evident in the fascinating story of "Animal protein factor" (A.P.F.), which is succinctly set out in the above mimeographed bulletin produced in March of this year.

It has long been realised that supplements of animal protein (*e.g.*, fishmeal) were necessary if poultry and pigs were to register optimal gains and reproductive performances, and to make adequate utilisation of vegetable protein in the rations. Of recent years it has become apparent that such supplements do not act solely by the provision of essential amino-acids or of hitherto identified B vitamins. Workers on poultry nutrition in the U.S.A. demonstrated convincingly that such supplements as condensed fish solubles, fish viscera, whole liver powder, dried rumen contents and dried cow manure contained some factor or factors which improved growth and hatchability in chickens receiving rations in which all the protein was in vegetable form, but in which all known dietary essentials were included. A highly active concentrate was obtained from extracted cow manure. During the course of these studies it was observed that chicks hatched from eggs laid by hens receiving rations containing only vegetable protein had a high incidence of kidney damage and a high death rate during the first week of life.

It was next discovered that A.P.F. was present in hen droppings, and that it was formed by microbial synthesis *after* the faeces had been voided. The micro-organism concerned was utilised to prepare a fermentation material which was found to be a rich source of A.P.F. for chicks and also of a therapeutically active fraction employed in the treatment of pernicious anaemia in human beings. The independent isolation in England and the U.S.A. of "vitamin B_{12}"—a red crystalline compound containing cobalt and phosphorus—was followed by animal studies in which it became apparent that part, but not all, of the A.P.F. activity was attributable to vitamin B_{12}. The presence of some factor in addition to vitamin B_{12} (which is in itself a growth factor for piglets and chicks) enhances the value for these and perhaps other species of A.P.F. Since certain micro-organisms from soil were found to produce vitamin B_{12} when grown in pure culture, a search was made to determine whether the other factor or factors in A.P.F. could be synthesised similarly. It was found that the organism, *Streptococcus aureofaciens*, which produces aureomycin, is a good source of A.P.F. By a fortunate coincidence, therefore, the same production unit can be employed to produce a powerful antibiotic and a highly active food supplement for domestic animals.

Details are given of the practical value of adding A.P.F. concentrate to rations for pigs (up to about 200 lb. liveweight), turkey poults, chicks, broiler fowls and breeders. The results, in experiments carried out by leading U.S.A. workers and reported through the proper scientific channels, indicate the very much more satisfactory performances to be expected when the rations contain adequate amounts of A.P.F.

Similar feeding trials need to be carried out under British conditions; in view of the scarcity of good sources of animal protein during recent years, there is reason to suppose that much of practical value could be learned from them and that the manufacture or distribution of A.P.F. concentrates in this country would be of material assistance to the animal industries concerned.

A. N. W.

* * * * *

[The Identification of *Clostridium Oedematiens* and an Experimental Investigation of its Role in the Pathogenesis of Infectious Necrotic Hepatitis "Black Disease" of Sheep. Jamieson, S. (1949.) *J. Path. Bact.* **61.** 389-402.]

The author describes in detail the methods used to study some 17 strains of *Cl. oedematiens* type B isolated from cases of necrotic hepatitis of sheep in the North of Scotland. Twenty-eight strains obtained from the liver of apparently healthy sheep, cattle, rabbits and one cow were less fully investigated and all freshly isolated strains were compared with three type A strains from human and bovine hosts. The two media found most effective for isolation were Robertson's cooked meat medium and Weinberg's V.F. agar.

Fermentation reactions were found to be unreliable for identification of this organism, but the 17 Type B strains examined failed to ferment glycerol. Toxin anti-toxin tests on solid media were found useful at an early stage of identification, but appear to be less reliable for Type B than for Type A since the latter grow more readily on solid media. A modification of Petrie and Steabbens' method proved the most reliable. An account is given of tests carried out for lecithinase production, which depends upon the medium in which the strains are grown; the more rapidly the organism grows the less lecithinase is produced.

In black-disease areas 17·1 per cent. of apparently healthy livers from various host species harbour latent spores of *Cl. oedematiens* compared with 1·3 per cent. in healthy livers obtained in areas free from the disease. The author states that the number of examinations (123) may not be large enough to justify more than tentative conclusions, but the two significant points arising from it are that sheep grazing in black-disease areas have a much higher incidence of latent *oedematiens* spores in the liver than those grazing elsewhere and that the relatively high incidence of latent spores in the liver of cattle (six out of eight examined) suggests that black-disease probably affects bovines in this country (N. Scotland).

Black-disease is due to the activation of latent spores of *Cl. oedematiens* in necrotic foci in the liver caused by the wanderings of the immature liver fluke, *Fasciola hepatica*. Attempts to reproduce the disease in rabbits were not successful.

J. M.

Bees and Goats.—An interesting case under this heading was heard recently in a Cambridge County Court. The goats were attacked and one actually died as a result of bee stings, the bees being kept on a ground adjacent to the goat pasture. The fact that the defendant won his case, being held not responsible for the misfortune, is of less interest to readers of *The Veterinary Record* than the fact that the goats actually were attacked. There are not a few records of bees turning their attention to animals and from time to time one hears of cases in which fatalities have occurred in poultry and also in horses as well as in goats. It is generally thought that bees strongly dislike the smell of animals, and in particular that of the horse and goat. One can imagine that under humid conditions following rain in warm weather such animals might well exude an odour obnoxious to humans as well as bees.

REVIEW

[The Dairy Farmer's Encyclopaedia. By Alan Morley. "Right Way Books." J. G. Elliot. 5s. Pp. 214. Illustrated.]

The present reviewer confesses that he approached this volume with a prejudice induced by the title of the series. But if the other works in the series are of the quality of "The Dairy Farmer's Encyclopaedia" he owes the sponsors an apology! This is indeed a miracle of compression and lucid expression. It is, of course, quite impossible to give a detailed exposition of dairy farming in the space of 214 pages, but the broad principles are here combined with as much detail as suffices to make them clear. The author very sensibly begins with the cow's udder and the mechanics of milk secretion, going on to elaborate the points of a dairy cow and bull. A chapter on breeding and improvement is full of sound sense, as is the discussion on various systems of management and policy. Feeding and rationing systems are set out clearly, for the various classes of stock necessary for the adequate maintenance of a dairy herd, and snags likely to be encountered dealt with fairly. Pros and cons are stated clearly throughout, though the author's fondness for the reviewer's favourite breed—the Red Poll—is allowed to emerge.

Every veterinary surgeon engaged in agricultural practice should know everything in this book if he is to be the "guide, philosopher and friend" of his clients. As most of the contents are extra-curricular, it takes most of us, unless we are used to farming, about 20 years to learn these things! To such as wish to lessen this period, this book will be most useful. It is, however, somewhat difficult to know to whom else to recommend it. It is not sufficiently deep either for agricultural students or for an established dairy farmer as a work of reference; but to the city man taking up farming it would be invaluable—it would make many aspects of dairy farming clear to him. He, and many others, would find it a most worth-while investment of 5s.

NOTES AND NEWS

Diary of Events

Sept. 3rd-8th.—Sixty-eighth Annual Meeting and Congress of the National Veterinary Medical Association, at Cardiff.

Sept. 7th.—Annual General Meeting of the V.V.B.F. Ladies' Guild at Cardiff (City Hall), 10.30 a.m.

Sept. 7th.—Annual General Meeting of the Association of Veterinary Teachers and Research Workers, at Cardiff (Technical College, Cathays Park), 11.45 a.m.

Sept. 15th.—Meeting of the Southern Counties Division, N.V.M.A., at Southampton (Polygon Hotel), 6 p.m.

Sept. 22nd.—Meeting of the Biochemical Society in the University of Liverpool (Derby Hall, N. Mossley Road), 11 a.m. The meeting will take the form of a symposium on "The Biochemistry of Fish."

Sept. 27th.—Meeting of the Editorial Committee, N.V.M.A., 1.30 p.m., to be followed by Meeting of the Executive.

Sept. 28th.—Summer Meeting of the East Midlands Division, N.V.M A., at Thurgarton, Notts. (See Notice.)

Oct. 13th.—General Meeting of the South Wales Division, N.V.M.A., at Carmarthen. (See Notice.)

* * * * *

N.V.M.A. Congress at Cardiff

The President's Reception

Members are asked to note that the President's Reception, at the Park Hotel, Cardiff, on Tuesday, September 5th, will commence at 8.30 p.m. and not at "7.30 for 8 p.m." as given in the official programme.

Veterinary Partnerships

The N.V.M.A. has prepared a memorandum making suggestions in connection with the drafting of agreements between members of the profession proposing to enter into partnership. This memorandum, which covers the points which in fact should be dealt with in such an agreement, is drawn up under a number of main headings, with comments in each case, and can be obtained from the General Secretary upon request.

The memorandum can also be obtained with an attached copy of the N.V.M.A. specimen form of agreement covering the employment of an assistant.

* * * * *

PERSONAL

Births.—Clifford.—On June 29th, 1950, to Mary, wife of H. R. Clifford, Veterinary Officer, Uganda, at Kampala, a son.

Hastie.—On August 17th, 1950, to Pamela and Stewart Hastie, of Ashford, Kent, a brother for Carolyn.

Lewis.—On July 10th, 1950, at Kingston, Jamaica, B.W.I., to Nancy (*née* Gibbons), wife of Alan Lewis, M.R.C.V.S., a son—Thomas Cresswell.

Muir.—On August 24th, 1950, to Denise (Rowe), wife of Thomas Howie Muir, M.R.C.V.S., Blank House, Wymondham, Norfolk, a daughter—Caroline.

Renwick.—On August 18th, 1950, to Mary, wife of C. C. Renwick, at Johore Bahru, Federation of Malaya, a daughter—Alison Mary.

. . . . .

Marriage.—Warde—Currie.—At St. Mary's Parish Church, Andover, on Saturday, August 5th, 1950, John Dennis Warde, M.R.C.V.S., second son of Mrs. R. Warde, of Cuckfield, Sussex, to Phyllis Rosemary, only daughter of Mr. and Mrs. H. R. Currie, of Andover, Hants.

* * * * *

ANIMAL HEALTH TRUST RESEARCH STATIONS

Further to our announcement (printed as received) of Dr. Minett's appointment as Director of the Group of Farm Livestock Research Stations of the Animal Health Trust at Houghton Grange, Dr. Wooldridge writes setting out the true positions of those directing the scientific work of the Trust.

Dr. Minett has not been appointed as Director of the Group of Farm Livestock Research Stations, but Director of the Bovine Research Station.

The true scientific set-up is:—

Scientific Director of the Animal Health Trust:
Dr. W. R. Wooldridge, M.SC., M.R.C.V.S.
Deputy Scientific Director:
Professor Wm. C. Mil'er, M.R.C.V.S., F.R.S.E.
Director of the Equine Research Station:
Professor Wm. C. Miller, M.R.C.V.S., F.R.S.E.
Director of the Canine Research Station:
Mr. S. F. J. Hodgman, M.R.C.V.S.
Director of the Poultry Research Station:
Dr. R. F. Gordon, M.R.C.V.S.
Director of the Bovine Research Station:
Dr. F. C. Minett, C.I.E., M.B.E., M.R.C.V.S.

Of these Stations the first three are now fairly well established, but the Bovine Research Station is still in the early stages of development. Dr. Minett will undertake the full development of this Station. Research Stations have not yet been established for pigs, sheep, goats and cats, although work is being undertaken by various individuals working under the auspices of the Trust upon some of the problems affecting these animals. Hitherto much time has been spent in developing the farming side of the estate, and for the continuation of this work a farming committee, including the farm manager and the various directors of the Research Stations, has been formed.

* * * * *

A disease first observed about ten years ago is now spreading among the chamois in the Swiss Alps. It causes blindness in the animals, and many in this state have fallen from rocks. Their bodies are being examined in an effort to find a remedy to the epidemic.—*The Times.*

* * * * *

The annual report on Manx livestock diseases shows that there has been no outbreak of foot-and-mouth disease or of fowl pest in the Isle of Man.

BOVINE TUBERCULOSIS AREA ERADICATION SCHEME

Under Britain's large-scale project to eradicate bovine tuberculosis area by area, which will come into operation on October 1st, two years' notice of intention to establish such an area must be given. During the period of waiting, herd owners (beef as well as milk) will be given free testing facilities in preparation therefor. Meetings will be held shortly in Wales and Scotland to discuss the boundaries of the first areas to be selected for free testing, in connection with which detailed proposals have been put forward by the Ministry of Agriculture.

Negotiations are still proceeding between producers' representatives and the Ministry on the subject of slaughter and compensation. A further meeting will be held in London within a few weeks to discuss details.

* * * * *

ADDRESSES OF DISEASE-INFECTED PREMISES

The list given below indicates, first, the county in which are situated the premises on which disease has been confirmed, followed by the postal address and date of outbreak.

FOOT-AND-MOUTH DISEASE:

Beds.—Park Farm, Bletsoe, Bedford (Aug. 26th).

SWINE FEVER:

Cambridgeshire.—Green House Farm, Teversham (Aug. 21st).

Cheshire.—Yew Tree Farm, Adlington, Macclesfield (Aug. 24th).

Lancs.—Derby Farm, Treales, Kirkham; The Bungalow off Pimbo Lane, Upholland, Wigan; "Brooklands," Stryands, Hutton, Preston; Astley Farm, Haigh, Wigan (Aug. 21st); 14, Golbane Road, Lowton, Warrington; Rainford House, Ormskirk Road, Rainford, St. Helens (Aug. 24th); Vauxhall Bridge, Clayton Bridge, Manchester, Lancs; Oak Farm, West Derby, Liverpool, 12 (Aug. 25th).

Lincoln (Parts of Lindsey).—14, Pennall Street, Lincoln (Disease at Skew Bridge Allotments, Lincoln), (Aug. 25th).

Merionethshire.—No. 1 Pigsty, Plasey Street, Bala (Aug. 23rd); Bodrening Farm, Arenig, Bala (Aug. 26th).

Notts.—Forest Farm, Farnsfield, Notts (Aug. 21st).

Sussex, W.—Mill Farm, Padham, Sussex (Aug. 21st).

Yorkshire (North Riding).—Newsham Manor Farm, Great Habton, Malton (Aug. 23rd).

Yorkshire (West Riding).—Storth Farm, Birkby, Huddersfield, York (Aug. 25th); West Moor Farm, Armthorpe, Doncaster (Carcase at Abattoir, Market Place, Doncaster); Whitwell House Farm, Linton, Wetherby; High Bentley Farm, Green Lane, Shelf; Dews Farm, Marton-cum-Grafton (Aug. 26th).

* * * * *

The Veterinary and Remount Centre, Melton Mowbray

[CONDENSED FROM AN ILLUSTRATED ARTICLE IN "SPORT AND COUNTRY," BY COURTESY OF THE EDITOR.]

Ever since the closure of Weedon, in 1939, the R.A.V.C. has been responsible for all training of riding instructors in the British Army; and while a course is in progress, the Equitation Wing of the Remount Depot at Melton Mowbray becomes the Army Equitation School. Horses and humans are trained at one and the same time. The students—officers and men from the Household Cavalry, the King's Troop of Royal Horse Artillery and the Royal Army Service Corps—are each given three horses to look after when they arrive. One of these horses is trained, one half-trained, and the third "green"—the idea being that, by the end of the six months' course, the half-trained horses will have become fully trained and the "green" ones half-trained. The latter, unless circumstances compel their issue to a unit beforehand, are put out to grass until September, when they are toughened up for their final training during the next course beginning in October.

About 60 horses a year pass through Melton Mowbray, being bought as four- or five-year-olds. On arrival they are exercised and got into hard condition. Then follows a period of very gradual schooling. The R.A.V.C. can, and does, afford to spend far more time over the training of its remounts than is economically possible in the case of the ordinary civilian animal.

As the V. & R. Centre at Melton Mowbray is also the Corps' Depot, it follows that R.A.V.C. personnel receive their training there. And among the courses is one for National Service veterinary officers, who do two months' training before being posted to a unit. For them the day begins with an 8 o'clock parade, followed by foot-drill, equitation instruction, work at the Dog School, and a number of other duties. An up-to-date hospital with X-ray and diathermy departments is available, and case histories and records are kept with great thoroughness.

War Dog Training

The mere presence of guard dogs, to patrol depots and camps at night, has proved a deterrent to theft. In the Middle East, between 1942 and 1948, guard dogs were responsible for 3,398 arrests and the recovery of £94,000 worth of Government property; one Boxer being alone responsible for 138 arrests.

Dogs for service in the Army are mostly bought at about 18 months of age. On arrival at Melton Mowbray they are subjected to a very thorough veterinary examination, even blood samples being taken, before exercising and training begin. Obedience is the first essential, and all war dogs are taught to obey five commands: "Heel," "Sit," "Lie," "Come" and "Stay." Afterwards their special duties may involve one or two additional words of command.

Liaison dogs are trained for message-carrying, and could be of great service where local conditions render radio "walkie-talkie" equipment almost useless. Patrol dogs, usually Alsatians, are trained to indicate isolated enemy positions, *e.g.*, machine gun nests or listening posts, by "pointing." They have had a marked effect in raising the morale of patrols advancing through jungle or scrub. Other dogs are trained to locate wounded men, and as they can quarter a large area of ground in a very short time, and can work in darkness, they bring help to casualties many of which would otherwise be missed by stretcher parties. Pack dogs, animals weighing about 80 lb., are trained to carry a load of 40 lb. in two panniers. The longest period of training, 12 months, is required for a tracking dog, the quality of the latter's performance depending a great deal upon the understanding of his master, and the length of time they have been working together. The training of mine-detecting dogs is achieved by scattering pieces of meat for the dog to find and eat. Later the meat is put into open tins and buried. In the next stage tins are buried without meat and the dog is rewarded every time it finds one.

An important side of the work at Melton Mowbray is the training of dog handlers, who come from the various units to which dogs are to be issued. Many war dogs trained by the R.A.V.C. are now on duty with our troops overseas: in Egypt, Hong Kong and Malaya.

G. P. W.

* * * * *

RECOMMENDED COMMON NAMES FOR PEST CONTROL PRODUCTS

At the beginning of this year the British Standards Institution made the widespread announcement in the technical trade Press that a Technical Committee had been appointed to devise simple, common names for well-established pest control products (including insecticides, insect repellents, acaricides, nematocides, fungicides, herbicides and rodenticides). The need for common names which do not conflict with proprietary names was pointed out on account of the considerable confusion which has arisen in commercial descriptions and in the technical literature.

The B.S.I. now announce that this Technical Committee has prepared the first list, containing some 25 common names for the better-known products now in general use in agriculture and in veterinary circles throughout the country. This list is being circulated for technical comment among Government departments, manufacturers and the interested scientific societies before final publication. In order to pre-empt the use of these names as proprietary, the list has been lodged with, and approved by, H.M. Patent Office. The names will be given protection and will be referred to when application is made for the registration of proprietary names for pest control products.

Wherever possible, the names adopted conform with those already accepted as coined common names by the U.S. Department of Agriculture, and the same system of protection is given by the U.S. Patent Office. It is hoped that the same measures will extend to other countries in due course.

The chemical names assigned to each compound are in accordance with the principles recommended by the Chemical Society. Where possible, only the pure active ingredients have had common names assigned to them, and an endeavour has been made to avoid, with a few outstanding exceptions, the use of initials and numbers. These exceptions are made in the cases of compounds which are already well known by initials, such as DDT and BHC, since a further name would only increase the confusion.

During the drafting the Technical Committee has maintained liaison with the Commonwealth countries as well as with the appropriate committee in the United States.

ANIMAL PRODUCTION IN EUROPE

The European Association for Animal Production, which was formed in Paris in November last year, has now established its headquarters at 54, Via Quintino Sella, Rome, with Mr. Holger Aersoe as secretary. The council of the Association has appointed a number of special commissions to study various aspects of animal production. These include one to undertake the co-ordination of animal husbandry research in Europe, under M. Braconnier (France), and another to study horse-breeding problems under M. Rulot (Belgium).

The council has arranged to hold its first scientific meeting at the University of Ghent, in Belgium, from October 11th to 15th. This meeting will study the role and uses of hormones in animal nutrition, and a number of scientists, including Dr. John Hammond, of Cambridge, have accepted the council's invitation to present papers.

The council is anxious to arrange for effective collaboration among existing international and other organisations in the field of animal production, and to avoid unnecessary duplication of such organisations in Europe. To this end it is working closely with F.A.O., and has already recommended F.A.O. to take whatever steps it can to prevent the setting up of a multiplicity of organisations dealing with different aspects of animal production.

CORRESPONDENCE

The views expressed in letters addressed to the Editor represent the personal opinions of the writer only and their publication does not imply endorsement by the N.V.M.A.

"ANAVENOL": A SHORT-ACTING ANAESTHETIC FOR THE HORSE

Sir,—I have read with much interest the contribution made to your last issue by Mr. Parry on the use of "Anavenol" as a short-acting anaesthetic, also his further article, and that by Mr. Harrow, on the improved form of this agent, "Anavenol"-K. Of the use of the latter I have no experience, nor indeed have I given a personal trial to the former, but I was present at a demonstration of the "simple" anaesthetic by Mr. Parry: it was the only time that I have seen the drug used. The subject was a two-year-old pony colt and it was proposed to castrate him under the anaesthetic. The drug was given satisfactorily and the colt behaved just as the paper describes. When down the operator unfortunately omitted to test the pony for anaesthesia. He relied on Mr. Parry's answer of "Yes" when asked was the patient ready for operation? As soon as a cut was made there is no doubt in my mind that the colt felt quite a deal of what was going on. There was no violent struggling but undoubtedly he was *not* completely anaesthetised. A short period was allowed for the anaesthesia to become deeper. This did not happen and when the operation was continued sensation was still present. I presume that a further quantity of Anavenol should have been given in this case after the colt was down, and then maybe we should have had anaesthesia. This is a point which possibly should be stressed.

I regret that I have not used this drug myself and that my experience is confined to only one case which, however, was in the hands of the man who must have had most experience of the anaesthetic.

I should say that the colt was under deep narcosis and was not anaesthetised. I stand to be corrected there, but while on paper the impression is given that Anavenol is a first-class anaesthetic of short duration for the horse, I am not quite sure myself.

Yours faithfully,

Veterinary Infirmary, J. Pickup.
74, Wood Street, Barnet.

August 28th, 1950.

* * * * *

TREATMENT OF THE LEUKOSIS COMPLEX

Sir,—I would be grateful for space to comment on an article by Holman & Wells[1] in your issue for July 22nd.

These workers, following my observation of 1940[2] that injections of iodine might in some cases cause complete recovery from fowl paralysis, took a group of 30 paralysed birds and gave 15 the injections I had recommended. The remaining 15 were left as controls but they were not separated from the treated birds. Holman and Wells concluded that under the conditions of their experiment, in which treated and control birds were kept together, no beneficial effects resulted from the injections. I am not surprised at this conclusion, for I advocated iodine injections as a curative only, and one moreover that was by no means 100 per cent. effective. It was a very severe trial indeed to administer a curative agent as a preventive, and subsequently to mix up treated and control birds, bearing in mind all the complex variables presented by herd immunity. I might ask, for example, whether penicillin would stand up to such a trial. However, iodine injections administered in the strength and in the manner I suggested have been used as a preventive, and successfully, in a large-scale field trial carried out early in 1947 by the Veterinary Adviser of the Iodine Information Bureau with the co-operation of the area Poultry Investigation Officer of the Ministry of Agriculture. I was not aware until 1948 that this trial had been carried out, nor have I been able to learn whether, as in this latest experiment by Holman and Wells, treated and control birds were mixed together. The results of the field trial of 1947, which was carried out in Oxfordshire, are as follows:—

Flock	*Number of birds in flock*	*Severe cases treated*	*No. given preventive injections*	*Controls untreated*
A ...	67	3	30	34
B ...	108	4	57	47
Total ...	175	7	87	81

The seven severe cases, which showed symptoms varying from complete inability to move except by pushing the body along the ground with one sound leg to an ataxic stilted gait, at once responded and made complete recovery. With the onset of very severe weather, deep snow and bitter cold, they relapsed and required re-injection. Again they responded and recovered. Despite the severity of the paralysis these birds came into lay two to three weeks after injection. Not one of the birds in the two groups given preventive injections developed the disease; but in the two untreated control groups a total of six birds (three in each group) succumbed and were killed. The general health, appearance and vigour of the treated birds improved greatly, laying was more prolific, appetite increased and they ranged well for food.[3]

Yours faithfully,

44, Lensfield Road, Cambridge. Ernest Gray.

August 22nd, 1950.

[1] Holman, H. H., & Wells, Audrey J. (1950.) *Vet. Rec.* **62.** 29.
[2] Gray, E. (1940.) *Vet. J.* **96.** 28.
[3] Iodine Information. (1947.) 13.

DISEASES OF ANIMALS ACTS, 1894 TO 1937, AND AGRICULTURE ACT, 1937 (PART IV).

Summary of Returns of Confirmed Outbreaks of Scheduled (Notifiable) Diseases

Period	Anthrax	Foot-and-mouth	Fowl Pest	Parasitic Mange*	Sheep Scab	Swine Fever
July 16th to 31st, 1950	13	2	4	—	—	8
Corresponding period in—						
1949	8	—	18	—	—	—
1948	5	—	4	—	2	—
1947	7	2	65	—	1	1
Jan. 1st to July 31st, 1950	233	16	100	—	19	43
Corresponding period in—						
1949	114	11	337	—	28	5
1948	55	—	215	1	20	22
1947	55	103	654	1	35	17

Note.—The figures for the current year are approximate only.

* Excluding outbreaks in Army Horses.

Tuberculosis (Attested Herds) Scheme

The number of Attested Herds, *i.e.*, herds officially certified as free from Tuberculosis as at July 31st, 1950, was as follows:—

22,856	14,841	12,976	50,673